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Pycnogonida from the Western Pacific Islands, XV. *Achelia cuneatis* n. sp. and a Known Species from Sakhalin Island, Russian Far East

C. Allan Child

National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560, U.S.A.

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A new pycnogonid species, *Achelia cuneatis*, is described and illustrated from specimens collected in shallows of northeastern Sakhalin Island, Russian Far East. One known species, *Nymphon brevitarse* Krøyer, is also reported from a few specimens found in the same locality. The new species is compared with two congeners known from northwest Pacific waters.
Key Words: Pycnogonida, Sakhalin Island, *Achelia cuneatis*, *Nymphon brevitarse*.

Several shallow water stations were sampled along a small area of the northeastern coast of the island of Sakhalin, Russian Far East, during a petroleum survey of that island in 1996 and 1997 (sender, P. Slattery, pers. comm.). These benthic stations yielded only two species of pycnogonids. This is in keeping with the nature of Boreal Arctic marine environments where fewer species but numerous individuals are commonly found in most habitats (Hedgpeth 1949:237). The two species are *Nymphon brevitarse* Krøyer, 1838, a common Boreal Arctic species of shallow habitats, and a new species, *Achelia cuneatis*. The new species is the more common of the two at least in the small area sampled. Its collection comprises more than fifty specimens from 17 stations while that of *N. brevitarse* has only three specimens from two stations.

Family **Ammotheidae**
Genus ***Achelia*** Hodge, 1864
Achelia cuneatis, new species
(Fig. 1)

Material examined: Holotype: male, Sakhalin, NE coast, 52°28.4'N, 143°36.5'E., 35 m, 22 August 1996, Sta. P-4B (USNM 234737). Paratypes: 5 males with eggs, 1 female, 12 juveniles, same locality and date, from a cluster of four stations (USNM 234738).

Other material: 12 males with eggs, 5 males, 14 females, 18 juveniles, 5 larvae, same locality, June and September, 1997, 30-40 m, from 13 stations in the same vicinity (USNM).

Distribution: The species is only known from its type locality off the east coast of northern Sakhalin in 35 m, and from several nearby localities in 30-40 m.

Description: Size moderately large for the genus, leg span about 16 mm. Trunk

ovoid to rounded in dorsal aspect, without segmentation sutures, with low rounded tubercles at anterolateral corners of cephalic segment, each tubercle carrying a spine. Lateral processes closely spaced, touching at bases, slightly separated distally, each armed with broad, rounded or conical dorsodistal tubercle, and 1-3 short antero- and posterolateral spines. Ocular tubercle low, at anterior edge of short cephalic segment, slightly taller than its diameter, eyes large, darkly pigmented. Proboscis ovoid, little more than half length of trunk, slightly compressed dorsoventrally, with two tiny dorsolateral bumps above oval mouth. Abdomen slightly longer than first coxae of fourth lateral processes, wedge ウ shaped in dorsal aspect, slender proximally at trunk insertion and bulbous distally, armed with 4-5 short dorsal and laterodistal setae.

Chelifores moderately long and slender, about half proboscis length, scapes each with a short distal seta, chelae only small elongate bumps carried pointing inwardly. Palps 7-segmented, only as long as proboscis, third segment with incomplete suture lines, fourth segment longest, inflated at midpoint, with 2-4 distal setae. Distal three segments short, cylindrical, fifth little longer than wide, sixth segment twice as long as wide, seventh only a small nub, armed with 2, 3, and 2 short ventral and distal setae each.

Ovigers 10-segmented, armed with simple spines only. Third, fourth, and fifth segments subequal in length, fourth with two rows of four lateral spines. Seventh segment distally clubbed, armed with 3 long lateral spines. Eighth segment carried laterally on seventh, ninth-tenth segments also carried laterally on eighth segment, forming curve but without strigilis. Distal three segments with 1-2 simple spines.

Legs moderately long, slender, major segments armed dorsally and ventrally with short distally-pointing setae, some on low tubercles. First coxae with low, rounded, dorsal tubercle slightly smaller than those of lateral processes. Third coxae and femora armed with few short ventral setae. Cement gland opens from tiny dorsodistal tube just proximal to major dorsodistal spine. Tarsus very short, no longer than wide, with 1 dorsal and 3 smaller ventral spines. Propodus elongate, very slightly curved, armed with row of small proximal heel spines and slightly smaller distal sole spines in greater numbers. Claw short, only about 0.35 length of propodus, auxiliaries about 0.7 as long as main claw.

Female differences: Size slightly larger except for ovigers which are smaller, only slightly curved, and lack the distal recurved form of those in males. Tubercles of lateral processes and first coxae not as pronounced as those of male. Femora inflated conspicuously overall if specimen ovigerous.

Measurements of holotype in mm: Trunk length (chelifore insertion to tips of 4th lateral processes), 1.61; trunk width (across 2nd lateral processes), 1.8; proboscis length, 1.15; abdomen length, 0.78; third leg, coxa 1, 0.49; coxa 2, 0.76; coxa 3, 0.65; femur, 1.44; tibia 1, 1.4; tibia 2, 1.13; tarsus, 0.19; propodus, 0.8; claw, 0.26.

Etymology: The name is Latin (*cuneatis*, diminutive of *cuneus*, meaning something having the shape of a wedge) and refers to the wedge-shaped abdomen of the new species as viewed dorsally.

Remarks: It is not surprising to find yet another species of *Achelia* in these far northern Pacific waters, already known to contain a plethora of *Achelia* species. There will probably be several more species described from what appears to be the evolutionary birthplace or at least the center of distribution of the genus. According to the rather extensive literature on northern Pacific pycnogonids, there are approximately 21 *Achelia* species in American, Canadian, and Russian North Pacific waters,

with some additional species in northern Japanese localities (Nakamura and Child 1991). At least 10 species have been identified as known or described as new from Russian Far East Arctic waters of the northwest Pacific (Losina-Losinsky 1961). The total number from the North Pacific constitutes almost a third of the 69 known *Achelia* species, by latest count, in world oceans. This is in stark contrast with often prolific Antarctic pycnogonid speciation where only nine *Achelia* species are currently known and more than one may be synonyms (Child 1994).

This species is very similar to *Achelia brevirostris* Losina-Losinsky, 1961, also known from the Russian Far East. The general habitus of both species look very much alike. The trunks of both species, the abdomina, chelifores, proboscides (at least in dorsal view), the legs, and the distal leg segments including propodal heel, sole spines and claws are all very much alike. The exceptions are enumerated below and are mostly small (for a redescription of *A. brevirostris*, see Nakamura and Child 1991: 3-5, fig. 1A-1F). The most notable difference is in the palps. The seven segments in the new species, with the fourth inflated and the three distal segments as smaller cylinders with few setae, conflict with the eight-segmented palps of *A. brevirostris*. Here, the distal four segments are each longer and much more setose ventrally than in the present species. The second palp segment of the new species is much shorter than that of *A. brevirostris* and the third is apparently a close segment with only partial segmentation attached to the second. The lateral processes of *A. brevirostris* and its first coxae bear two laterodistal tubercles each that are smaller than the single dorsodistal tubercle of the new species. Other major disparities lie in the propodus and claw of the two species. The propodus of *A. cuneatis* is longer in relation to the tarsus, is less curved, has much smaller and less conspicuous heel spines, fewer sole spines, and has a shorter main claw with longer auxiliaries in relation to the main claw. The short leg spines are concentrated more on the third coxae and the second tibiae of *A. cuneatis*.

Finally, the distal three oviger segments of this new species are longer and more cylindrical than those of *A. brevirostris*, the tenth particularly so, and the plain spines of these segments conflict in number and size with the denticulate spines of the distal segments in *A. brevirostris*. The abdomen in *A. cuneatis* is slightly shorter than that of *A. brevirostris* and is distally inflated, giving it a wedge shape when viewed dorsally. The abdomen of *A. brevirostris*, while slightly longer, is greatly expanded proximally, thus lacking the wedge shape. Different lengths of major leg and oviger segments and a few other minor differences are present, but both species are closely related, as mentioned before. They are also close neighbors; both occur in the vicinity of Sakhalin Island.

There are also some similarities between this new species and *Achelia borealis* (Schimkewitsch, 1895), mainly in comparison of their legs and palps. The appendages of *A. borealis* are all longer and much more attenuate, although its lateral processes touch at their bases and diverge outward in similar fashion to those of *A. cuneatis*. There are eight palp segments in *A. borealis*, while the new species has only seven. *Achelia borealis* is another species with a broad distribution in the Russian Far East, among other North Pacific localities.

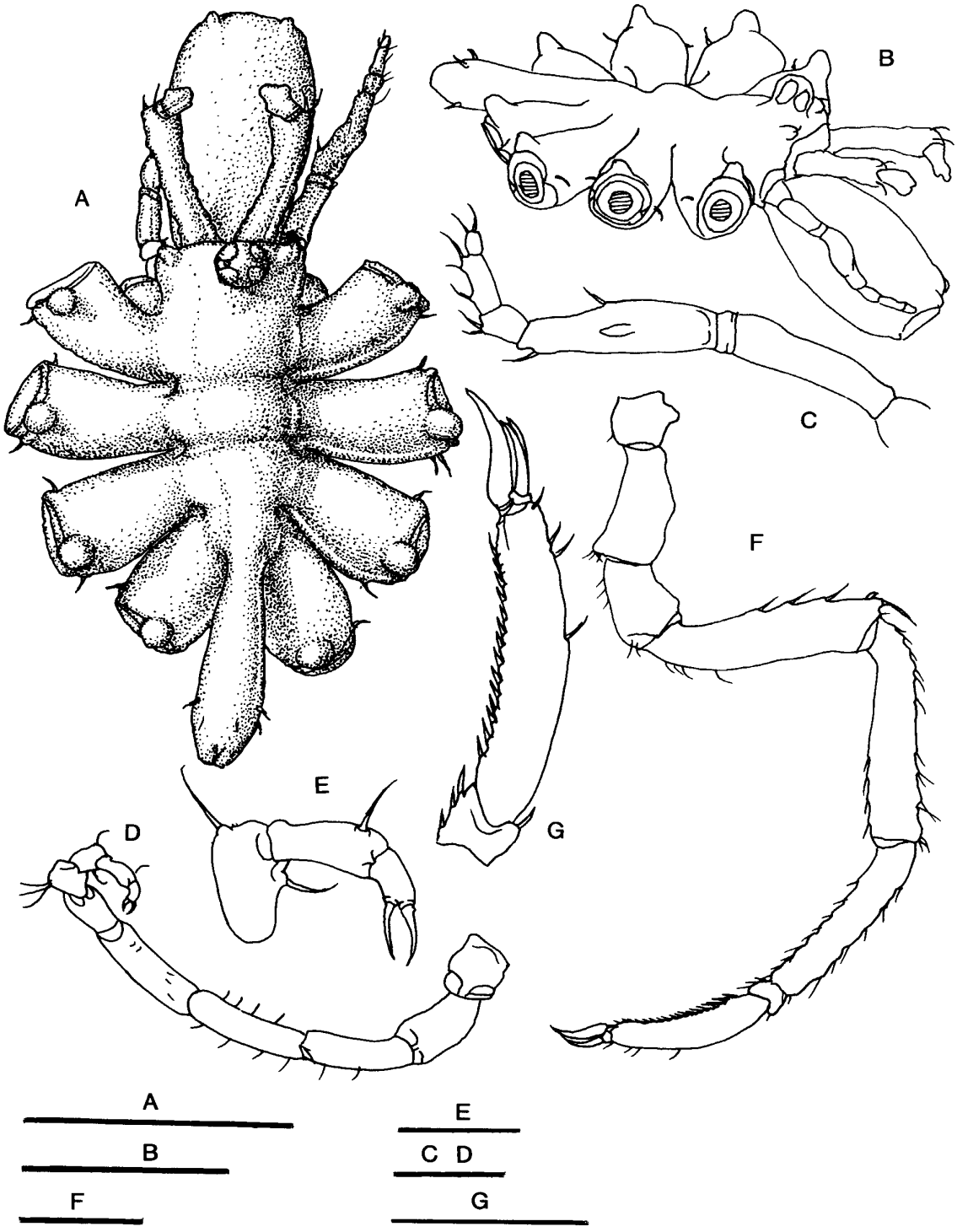

Fig. 1. *Achelia cuneatis*, new species, holotype. A, trunk, dorsal view; B, trunk, lateral oblique view; C, palp; D, oviger; E, distal oviger segments, enlarged; F, third leg; G. distal leg segments of third leg, enlarged. Bars A, B, F= 1mm; C, D, E, G= 0.5mm.

Family **Nymphonidae**
Genus ***Nymphon*** Fabricius, 1794
Nymphon brevitarse Krøyer, 1844

Nymphon brevitarse Krøyer, 1844: 115; Sars 1891: 61; Norman 1908: 211; Schimkewitsch 1930: 395; Stephensen 1933: 10-11; Hedgpeth 1943: 85.

Material examined: 1 male, 1 female, Sta. P1-A, northeast Sakhalin Island, 52° 28.4'N, 143°36.55'E, 35 m, 22 August 1996; 1 male, Sta. P4-B, same locality, depth, and date.

Distribution: This species has a long and confused history. It was originally found in many places of the Atlantic Arctic but was described again as *N. brevirostre* Hodge, 1864, and it includes many subspecies and varieties from the Russian Arctic described by Losina-Losinsky (1961). Sars (1891) also described it as *N. gracile*. It is common in arctic waters in shallow depths (from shallow to 50 fathoms: Hedgpeth 1949). It is currently regarded as a separate species from *N. brevirostre* and *N. gracile*.

Diagnosis: This species has a short trunk with short lateral processes separated by less than their diameters, a short neck, and relatively short segments of the cephalic segment appendages. Several of the appendages are quite variable in terms of segment lengths. This includes the palps, legs, and ovigers. The tarsus can be shorter than the short propodus or longer, and the major heel spines vary greatly in numbers and length.

Remarks: This variable species has been recorded in most reports treating boreal Arctic pycnogonids, and due to its appendage variability, it has often been confused with several other species or described as new.

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